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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,979	06/01/2001	Joseph C. Dettling	3919A (CON)	9458

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EXAMINER

KERNS, KEVIN P

ART UNIT

PAPER NUMBER

1725

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/873,979	<b>Applicant(s)</b> DETLING ET AL.	
	<b>Examiner</b> Kevin P. Kerns	<b>Art Unit</b> 1725	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2006 and 12 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,6,9,10,14,17-20,24,27,28,32 and 35-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,6,9,10,14,17-20,24,27,28,32 and 35-51 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: on page 1, line 23, insert "be" after "can". On page 4, line 18, replace "wahcoat" with "washcoat". On page 7, line 17, replace "seive" with "sieve". On page 9, 7<sup>th</sup> line, replace "over laps" with "overlaps". On page 15, line 19, replace "mutifunctional" with "multifunctional". On page 18, line 39, and page 19, line 13, there should be a "/" and 6 more digits after "08"; and these application serial numbers (and several others that appear throughout the specification) should be updated as US Patent Numbers, if appropriate. On page 20, line 19, replace "cna" with "can". On page 35, line 17, replace "cera-" with "ceria-". Corrections and/or clarifications are required for these and other errors that occur throughout the specification.

### ***Claim Objections***

2. Claim 18 is objected to because of the following informalities: in the 4<sup>th</sup> line of the claim, it is believed that "is" should be changed to "are". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 38-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 38 recites the limitation "the same catalyst architecture". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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7. Claims 1, 2, 6, 9, 10, 14, 17-20, 24, 38-46, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 92/09848 in view of Domesle et al. (US 4,588,707).

WO 92/09848 teaches a ceramic or metallic honeycomb substrate for treatment of exhaust gases. WO 92/09848 teaches the use of rare earth catalyst coatings for the substrate, particularly coatings of palladium with alumina or zirconia. The substrate may have multiple zones of catalyst coatings with a zone having more than one catalyst coating. The coatings of different zones may overlap and the thickness of the catalyst coatings may vary or be graded so that the coatings taper until a zone of upcoated substrate is achieved. (Figures 1a-1d and 2a-2d; and pages 12-15). WO 92/09848 does not teach that the substrate is a wall flow substrate.

However, Domesle et al. teach a wall flow ceramic honeycomb substrate with an inlet end and an outlet end that has wall elements that form a plurality of channels. Catalyst compositions of rare earth oxides are coated to the inlet end and outlet, with a noble metal being preferably coated at the outlet end. Domesle et al. teach that a wall flow substrate is useful because it causes gases to flow through pores and the wall, causing impurities to be filtered from exhaust gases. Domesle et al. teach that this is particularly useful for filtering Diesel soot from exhaust gas. (Domesle et al.; column 1, lines 63-68; column 2, lines 1-18 and 37-44; and column 3, lines 19-50).

It would have been obvious to one of ordinary skill in the art at the time that the applicants' invention was made to have modified the substrate of WO 92/09848 by the

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teachings of Domesle et al. One would have been motivated to do so in order to provide a substrate that was useful for filtering impurities from exhaust gases, particularly Diesel soot, as taught by Domesle et al.

8. Claims 47-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 92/09848 in view of Domesle et al. (US 4,588,707) as applied to claims 1, 2, 6, 9, 10, 14, 17-20, 24, 38-46, and 51 above, and further in view of Hu et al. (US 6,044,644).

The former references teach the substrate described in paragraph 7. However, these references do not teach the use of oxygen storage components.

However, Hu et al. teach catalyst supports for processing engine exhaust in which an upstream catalyst support lacks oxygen storage components, such as ceria and praseodymium oxide, while a downstream support includes these oxygen storage components. Hu et al. teach that this arrangement is beneficial for reducing engine emissions during engine cold starts. (Hu et al.; column 1, lines 5-11; column 6, lines 51-57; column 9, lines 37-51; and column 10, lines 55-58).

It would have been obvious to one of ordinary skill in the art at the time that the applicants' invention was made to have modified the substrate taught above by the teachings of Hu et al. One would have been motivated to do so in order to provide a substrate that would reduce emissions during engine cold starts, as taught by Hu et al.

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9. Claims 1, 2, 6, 9, 10, 14, 17-20, 24, 27, 28, 32, 35, 36, 38, 40, 42-46, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahata et al. (US 5,376,610) in view of Domesle et al. (US 4,588,707).

Takahata et al. teach a porous substrate for exhaust gas purification that may include multiple layers of catalyst coatings at the inlet and outlet of the substrate. The first catalyst layer may include transition metal oxides such as alumina along with noble metals such as Rh, Pt, or Pd. A second catalyst layer may then be coated over the first; the second layer includes transition metal oxides such as alumina, may include zeolites, and may include noble metals such as Pt or Pd. The upstream and downstream portions of the substrate may have different compositions of catalyst layers. (column 4, lines 36-62; column 5, lines 17-26, 40-42, and 50-54; column 7, lines 33-38; column 8, lines 36-44; column 9, lines 16-17 and 33-44; column 11, lines 6-17; column 12, lines 48-68; column 13, lines 23-59; column 15, lines 46-57; and column 16, lines 8-28).

Takahata et al. do not teach the use of a wall flow substrate or that a coating may lack a noble metal.

However, Domesle et al. teach a wall flow ceramic honeycomb substrate with an inlet end and an outlet end that has wall elements that form a plurality of channels. Catalyst compositions of rare earth oxides are coated to the inlet end and outlet, with a noble metal being preferably coated at the outlet end. Domesle et al. teach that a wall flow substrate is useful because it causes gases to flow through pores and the wall, causing impurities to be filtered from exhaust gases. Domesle et al. teach that this is

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particularly useful for filtering Diesel soot from exhaust gas. (Domesle et al.; column 1, lines 63-68; column 2, lines 1-18 and 37-44; and column 3, lines 19-50).

It would have been obvious to one of ordinary skill in the art at the time that the applicants' invention was made to have modified the substrate of Takahata et al. by the teachings of Domesle et al. One would have been motivated to do so in order to provide a substrate that was useful for filtering impurities from exhaust gases, particularly Diesel soot, as taught by Domesle et al.

10. Claims 37, 39, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahata et al. (US 5,376,610) in view of Domesle et al. (US 4,588,707) as applied to claims 1, 2, 6, 9, 10, 14, 17-20, 24, 27, 28, 32, 35, 36, 38, 40, 42-46, and 51 above, and further in view of WO 92/09848.

The former references teach the substrate taught in paragraph 9. However, these references do not teach that coatings from different catalyst zones may overlap or that there may be at least three catalyst zones.

However, WO 92/09848 teaches a catalytic substrate for processing exhaust gas. The substrate may have three zones of catalyst coatings and the coatings may overlap between zones. WO 92/09848 teaches that this arrangement may be used to provide higher catalyst activity at the front edge of the substrate, providing a lower light off temperature and no "hot-spotting" in the latter portion of the catalyst (WO 92/09848; Figures 1a-1d and 2a-2d; and page 14-15).

It would have been obvious to one of ordinary skill in the art at the time that the



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applicants' invention was made to have modified the substrate described above by the teachings of WO 92/09848. One would have been motivated to do so in order to provide a substrate with a lower light-off temperature and no "hot-spotting" in a latter portion of the substrate, as taught by WO 92/09848.

11. Claims 47-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahata et al. (US 5,376,610) in view of Domesle et al. (US 4,588,707) as applied to claims 1, 2, 6, 9, 10, 14, 17-20, 24, 27, 28, 32, 35, 36, 38, 40, 42-46, and 51 above, and further in view of Hu et al. (US 6,044,644).

The former references teach the substrate described in paragraph 9. However, these references do not teach the use of oxygen storage components.

However, Hu et al. teach catalyst supports for processing engine exhaust in which an upstream catalyst support lacks oxygen storage components, such as ceria and praseodymium oxide, while a downstream support includes these oxygen storage components. Hu et al. teach that this arrangement is beneficial for reducing engine emissions during engine cold starts. (Hu et al.; column 1, lines 5-11; column 6, lines 51-57; column 9, lines 37-51; and column 10, lines 55-58).

It would have been obvious to one of ordinary skill in the art at the time that the applicants' invention was made to have modified the substrate taught above by the teachings of Hu et al. One would have been motivated to do so in order to provide a substrate that would reduce emissions during engine cold starts, as taught by Hu et al.

***Response to Arguments***

12. The examiner acknowledges the applicants' amendment provided with the request for continued examination received by the USPTO on January 30, 2006 and April 12, 2006. The amendments to the claims overcome prior objections to the claims, as well as prior rejections under 35 USC 112, 2<sup>nd</sup> paragraph. However, new specification and claim objections, as well as new 35 USC 112, 2<sup>nd</sup> paragraph rejections, have been discovered and/or raised by the applicants' amendments (see paragraphs 1-4 above). In addition, the applicants' amendments to claim 1 overcome prior 35 USC 102(b) rejections. Claims 1, 2, 6, 9, 10, 14, 17-20, 24, 27, 28, 32, and 35-51 remain under consideration in the application.

13. Applicants' arguments filed January 30, 2006 have been fully considered but they are not persuasive.

With regard to the applicants' arguments on pages 9 and 10 of the remarks, although the examiner agrees that Domesle et al. is no longer valid as a 35 USC 102(b) reference due to the amendments to independent claim 1, the examiner respectfully disagrees with the applicants' assertion that the Domesle et al. reference, which is now commonly applied to all rejections under 35 USC 103(a), is "not cured by any of the secondary references relied upon in rejecting the claims. However, it is noted that Domesle et al. is NOT a primary reference in any of the rejections under 35 USC 103(a), but is only a common reference to all rejections. The applicants' response is silent with regard to all other references (WO 92/09848 and Takahata et al. of which

include the concept of "zones"), and appropriate motivation to combine the references exists (see paragraphs 7-11 above).

### ***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 4/28/06*  
Primary Examiner  
Art Unit 1725

KPK  
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April 28, 2006